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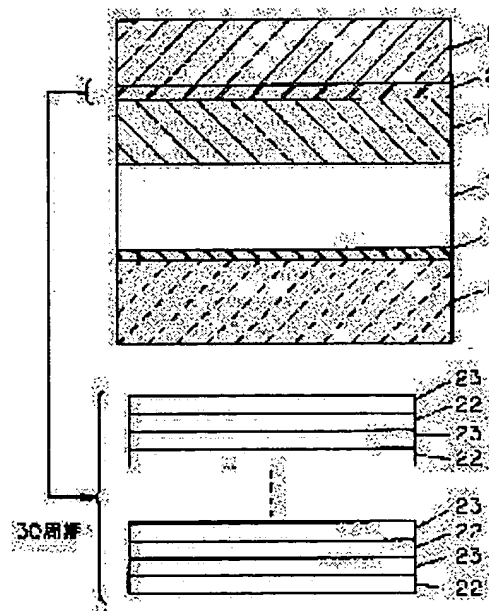
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## (54) FORMATION OF SEMICONDUCTOR THIN FILM

### (57)Abstract:

PURPOSE: To provide a formation method of an AlGaInN thin film of high quality which has little dislocation and point defects and is suitable for manufacture of a blue-color semiconductor laser element.

CONSTITUTION: A carbide layer continuously changing from Si to SiC is formed by setting the revolving speed of a heater on which a substrate is located to 300 rpm or higher, and feeding a methane gas onto an Si substrate 11 heated to 1200°C. The temperature is lowered to less than 600°C, and a GaN non-single crystal 12 20nm thick is formed. Then, a GaN layer 13 is formed with a substrate temperature not lower than 900°C, and an AlGaInN layer 15 for lattice matching with the GaN layer 13 is formed on the GaN layer with a substrate temperature set within a range of 300-900°C. To form the AlGaInN thin film, an alkylamine based material, a hydrazine based material, or a mixture of an alkylamine based material, a hydrazine based material and ammonia, is used as a nitrogen material. Thus, an AlGaInN thin film of high quality with little dislocation and point defects can be formed at low temperatures.



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